



# INSTALLATION RESTORATION PROGRAM

April 2006



## Proposed Plan for Hangar 1000 (Potential Source of Contamination 52) Naval Air Station Jacksonville Jacksonville, Florida

### Facility Description

Naval Air Station (NAS) Jacksonville occupies approximately 3,900 acres on the west bank of the St. Johns River in southeastern Duval County, Florida as shown on Figure 1. The station is located 13 miles south of downtown Jacksonville. It was commissioned on October 15, 1940, to provide facilities for pilot training and a Navy Aviation Trades School for ground crewmen. Its physical size more than doubled in support of World War II military operations. Since 1951, the facility has served the dual purpose of training pilots and ground crewmen and supporting operational carrier squadrons. In November 1989, NAS Jacksonville was added to the **National Priorities List**.

### Site Description

**Operable Unit 6, Potential Source of Contamination (PSC) 52**, includes **Hangar 1000**. Hangar 1000 is located slightly south of the flightline (John Towers Field) at NAS Jacksonville along the northern side of Yorktown Avenue slightly more than one mile east of the main entrance (Yorktown entrance) to NAS Jacksonville off of Roosevelt Boulevard as illustrated on Figure 2. Hangar 1000 is part of a complex that houses large aircraft at NAS Jacksonville.

Surface features at Hangar 1000 are shown on Figure 3. The site is flat and the Hangar itself is surrounded on the east, north, and west by a concrete apron/taxiway and on the south by asphalt parking for automobiles. The keyway is on the south side of the hangar facing the parking area and Yorktown Avenue.

Stormwater in the vicinity of Hangar 1000 is primarily diverted to an underground storm sewer conduit on the south side of Yorktown Avenue, but there is no preferred direction of overland flow due to the flatness of the site and surrounding area. There are no permanent surface water bodies of significant dimension in the vicinity of Hangar 1000, although a drainage ditch which ultimately

discharges into the St. Johns River is present downgradient (southeast) of the site.

The Hangar 1000 regulated unit consists of two former Underground Storage Tanks (USTs), Tank A and Tank B, which were operated from the late 1960's until they were closed in 1994. These tanks were located on the east and northeast side of the keyway as shown on Figure 3. Tank A was a 750-gallon capacity concrete tank used as an oil-water separator. Tank B was a 2000-gallon capacity steel UST, which received oil overflow from Tank A and waste oils and solvents discharged from wash racks and floor drains located inside the Hangar's maintenance facilities. The tanks were interconnected with 2-, 4-, and 6-inch diameter metal piping. The last known discharge of waste into the tanks occurred in November 1987. In 1994, the tanks and associated piping were excavated and removed, except for piping that had to be cleaned and abandoned in place due to the presence of structures.

Usage of the tanks for storage of waste liquids resulted in contamination of soil and groundwater. Assessment and cleanup of impacted areas began in 1991 and continues today. During excavation and removal of the tanks (1994), soil containing concentrations of contaminants exceeding risk-based target concentrations was delineated, excavated and transported offsite for disposal. Since that time, cleanup efforts at the site have been exclusively directed at groundwater, specifically at reducing concentrations of contaminants below risk-based target levels. Primary contaminants in groundwater are chlorinated solvent compounds contained in engine-cleaning agents. This Proposed Plan addresses the preferred measures for groundwater cleanup at Hangar 1000.

During its investigative history, 26 **monitoring wells** have been installed in the vicinity of Hangar 1000 for the purpose of groundwater quality assessment. Approximately eight chlorinated solvent contaminants have been identified at concentrations

### Site History

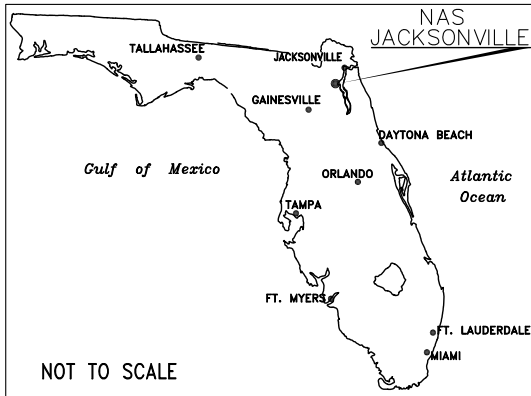
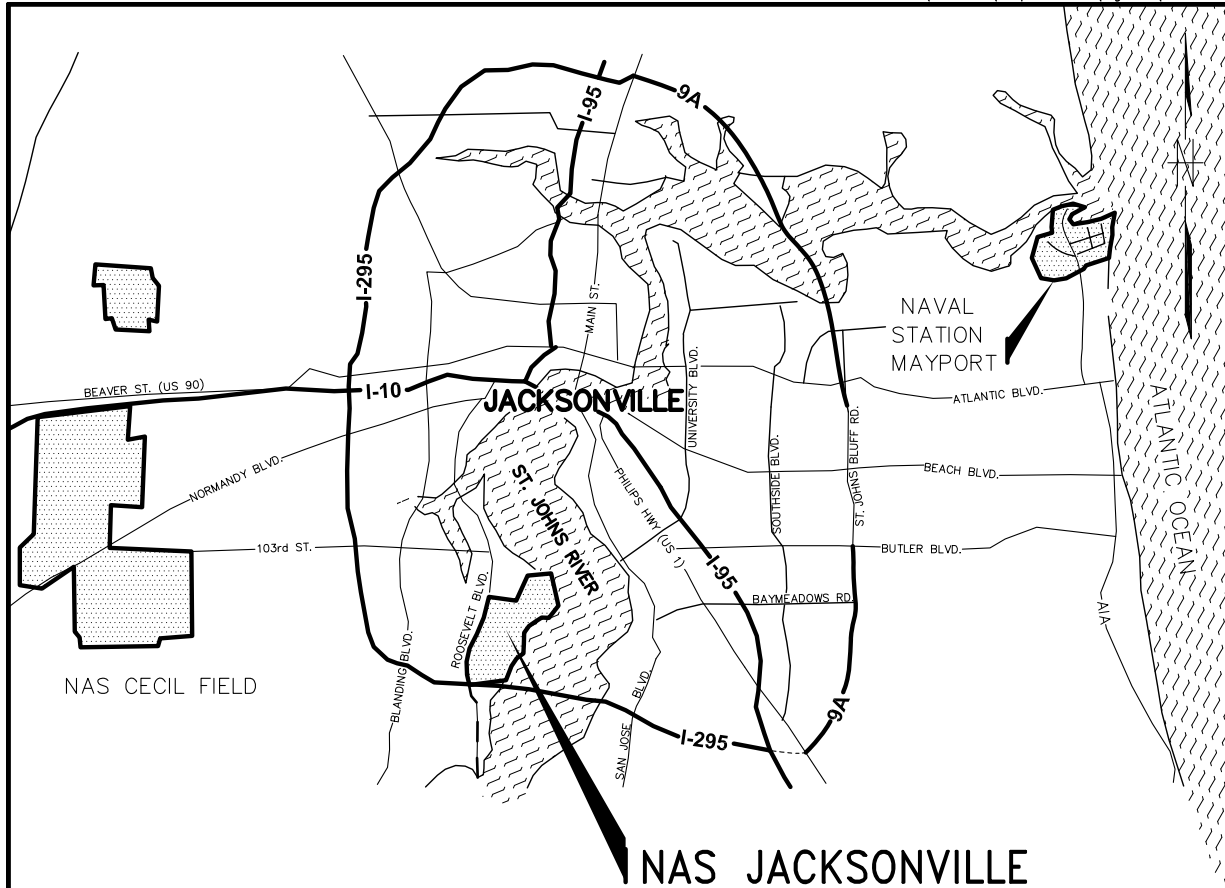
The following is a brief environmental history of Hangar 1000:

- **Late 1960s** – Tanks A and B go into service at Hangar 1000 as receptacles for **solvents** and waste oils discharged from other operations at the facility.
- **November 1987** – Last known discharge of waste into the tanks.
- **1989** – **Resource Conservation and Recovery Act (RCRA)** inspection discovers Tanks A and B were used to process discharges from Hangar 1000 wash racks and maintenance shops.
- **1991-92** – Initial assessment activities discovered **Volatile Organic Compound (VOC)** contamination in soil and groundwater at Hangar 1000.

- **1994** – Tanks A and B and most associated piping were removed, and contaminated soils were excavated and removed.
- **1995-1999** – Scope of the investigation expanded to define the lateral and vertical extent of groundwater contamination.
- **2000** – An agreement was reached to allow cleanup to be conducted under **CERCLA** with **RCRA** monitoring on a semi-annual basis.
- **2000-2001** – **Interim remedial action** (chemical oxidation) was performed in the source area.
- **2001-2002** – Additional assessment was performed to define extent of contamination in groundwater.
- **2004-2005** – **Nanoscale particles (NP)** study was conducted in the Hangar 1000 service area.

*This document summarizes the Navy's preferred cleanup plan. For detailed information on the options evaluated for **PSC 52**, the documents are available for review at the **information repository** located at Webb Wesconnet Branch, Jacksonville Public Library, 6887 103<sup>rd</sup> Street, Jacksonville, Florida.*

Bolded terms throughout this Proposed Plan are explained in the Glossary of Terms beginning on Page 10.

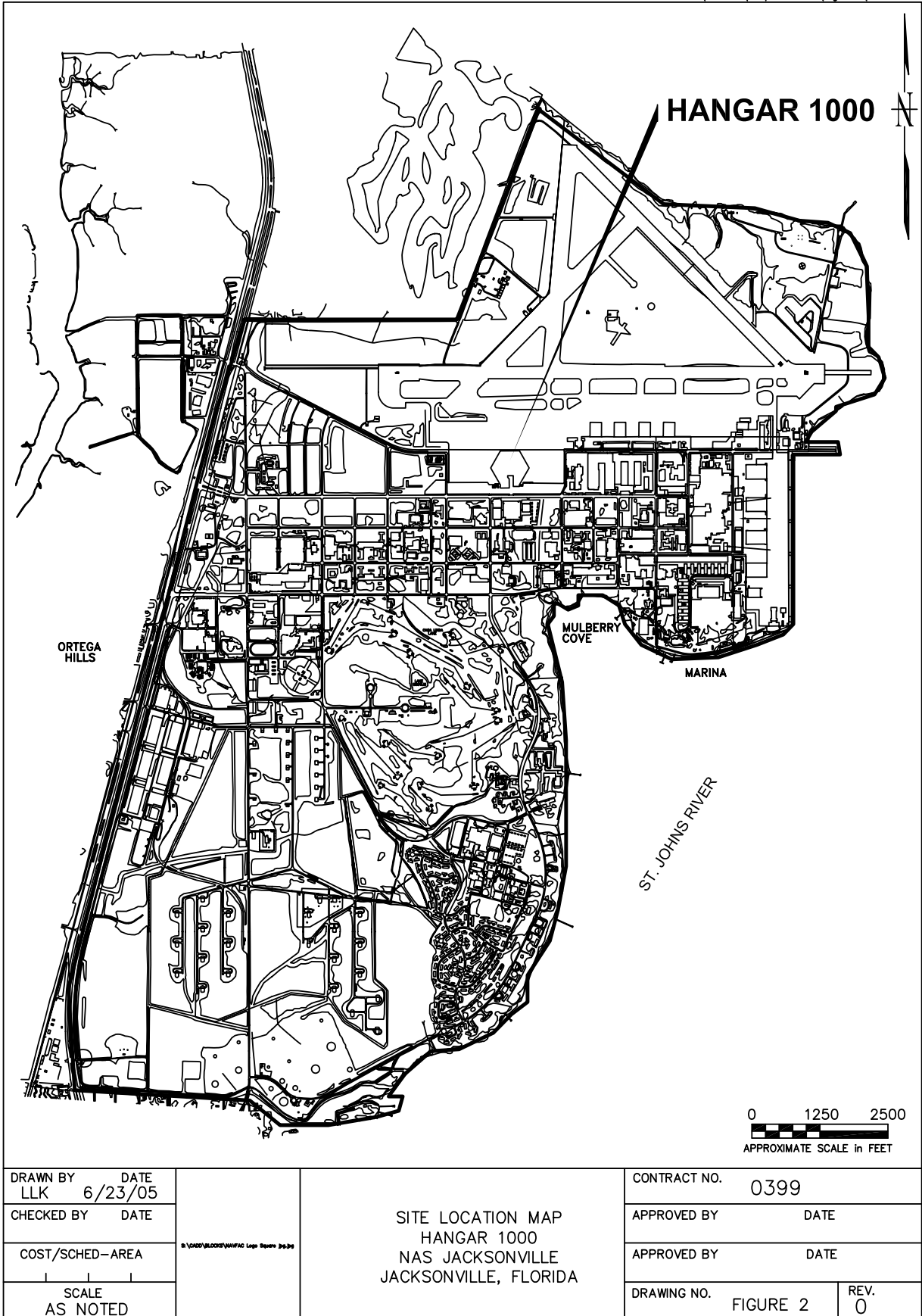


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REGIONAL LOCATION MAP  
NAS JACKSONVILLE  
JACKSONVILLE, FLORIDA

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exceeding **Groundwater Cleanup Target Levels (GCTLs)** established by the Florida Department of Environmental Protection (FDEP) in groundwater samples collected from the monitoring wells.

The approximate size of the groundwater **contaminant plume**, as presented in the Remedial Investigation Report, is shown on Figure 4. It has been determined that the contaminant source area is approximately 400 square feet in size and is centered on Tank A in the northeast quadrant of the **Hangar 1000** keyway. Groundwater flow direction in the **surficial aquifer** underlying Hangar 1000 is to the southeast toward Yorktown Avenue, which explains why the **contaminant plume** extends and broadens to the southeast from the source area, as indicated on Figure 4.

## About This Document

Per Section 117 of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**, this document summarizes the Navy's preferred alternative for site cleanup to help the public understand and comment. This plan has been developed by the Navy, in agreement with the United States Environmental Protection Agency (USEPA) and the FDEP. The Navy will continue to implement the remedy for Hangar 1000 after considering and addressing significant comments from the public.

The purpose of this plan is to request the public's views and comments on the preferred cleanup alternative. This plan highlights information from the **RI** and **Focused Feasibility Study (FFS)** report, but does not include all of the information contained in that document. The document is maintained at the **information repository**, which is located at the Webb Wesconnet Branch of the Jacksonville Public Library.

## What do you think?

The Navy, as the lead agency, is accepting formal public comments on this proposal from May 9 to June 9 2006. You don't have to be a technical expert to comment. If you have a comment, the Navy wants to hear it before beginning the cleanup. To comment formally:

**Offer oral or written comments** during the public meeting scheduled for May 9, 2006, at the Holiday Inn (US 17 and I-295) from 7:00 p.m. to 9:00 p.m.

**Send written comments** postmarked no later than June 2, 2006, to:

Bill Raspet  
Environmental Department  
Box 2, Naval Air Station Jacksonville  
Jacksonville, Florida 32212-5000  
Phone: (904) 542-4229, Fax: (904) 542-4368

**E-mail comments** by June 9, 2006, to:  
Email: Bill.Raspet@navy.mil

## Summary of Site Risks

The risk assessment analysis assumes that the site would remain an industrial area on NAS Jacksonville, which is its anticipated future use. The **surficial aquifer** at the site is not used as a groundwater source at this time, and NAS Jacksonville does not anticipate future use. Understanding this, the people that could be exposed to the soil and shallow groundwater contamination are construction, maintenance, and occupational workers and trespassers. It is reasonable to assume that the same groups could be exposed under the future industrial use scenarios.

A **Human Health Preliminary Risk Evaluation (HHPRE)** was performed to evaluate the potential impacts of the site contamination on construction, maintenance, and occupational workers; adolescent trespassers; and residents. Direct contact from use of contaminated groundwater under a residential land use scenario and indirect contact by exposure to indoor vapors emitted from the groundwater were evaluated. Based on this evaluation, the **HHPRE** found benzene; 1,2-dichloroethane (DCA); 1,1-dichloroethene (DCE); trichloroethene (TCE); 1,1,2-trichloroethane (TCA); tetrachloroethane (PCE); and vinyl chloride in groundwater as a cancer risk greater than what is acceptable by the FDEP (one in one million) for direct contact exposure from potable use of groundwater. In the indirect exposure pathway model, it is assumed that vapors of volatile chemicals are emitted from groundwater, migrate through surface and subsurface soil, migrate through cracks in the building foundation, and accumulate in air inside a building. The **HHPRE** determined that the potential risk to workers from chemicals through indirect contact was within acceptable limits.

For the foreseeable future, Hangar 1000 and the immediate vicinity surrounding it is considered by the station to be an industrial area, and no residential development is expected. Table 1 shows the chemicals with cancer risks greater than what is acceptable by the FDEP. In addition, the **HHPRE** reports a number called the hazard index. This value represents non cancer risks associated with contamination. The FDEP and USEPA agree that if a calculated hazard index is greater than 1.0, then the risk presented by the contamination is not acceptable. As with the carcinogenic risks, the hazard index for direct exposure from potable use of groundwater under a residential land use scenario exceeded the acceptable level of 1.0, but for indirect exposure to industrial receptors, the hazard index was less than 1.0. The hazard index of each receptor is presented in Table 1. A more detailed explanation of these terms is included in the **HHPRE**, which is part of the **RI/FS**.

A **Screening Level Ecological Risk Assessment (SLERA)** was performed as part of the **RI** to estimate potential impacts of site contaminants on various plant and animal life. The results of the **SLERA** showed that contamination in groundwater/surface water should not pose a significant risk to wildlife or other ecological receptors. Sediment samples were collected from the drainage ditch south of Yorktown Avenue at the outfall of the storm sewer downgradient (southeast) of Hangar 1000 in 1999, and although

## The Proposed Cleanup Plan

To clean up contaminated groundwater at Hangar 1000, the Navy proposes the following:

- Injected controlled amounts of an emulsion of catalyst-coated iron particles, known as **NP**, in the source area around the former location of Tank A. The **NP** injection was completed as a Treatability Study.
- Use **institutional controls** to restrict usage of the land to industrial purposes and prohibit usage of water from the surficial aquifer for

drinking purposes. Effectiveness of these controls would be verified by regular site inspections.

- Allow **natural attenuation** to occur, which removes contaminants through biological and other natural processes over time.
- Monitor the effectiveness of the **NP** treatment and **natural attenuation** processes by regularly collecting and analyzing groundwater samples from within the **contaminant plume**.
- Perform a site review every 5 years to verify the proposed remedy is working. If this is not the case, alternative cleanup approaches may be used.

Table 1 Preliminary Risk Evaluation - Detected Chemical Constituents in Groundwater Samples											
Proposed Plan for Hangar 1000 Naval Air Station Jacksonville Jacksonville, Florida											
Analyte	Frequency of Detection (1)	Screening Concentration		FDEP GCTLs (3)	USEPA MCLs (4)	USEPA Region 9 PRGs Residential (5)	Maximum Detected		UCL		Target Organs (3)
		Maximum Detected	Normal UCL (2)				Cancer Risk Ratio (6)	HI Ratio (7)	Cancer Risk Ratio (6)	HI Index (7)	
VOCs (µg/L)											
Acetone	1/28	26.3	25.1	700	--	610 N		0.04		0.04	Kidney, Liver, Neurological Carcinogen
Benzene	2/28	1	0.560	1	5	0.35 C	2.9E-06		1.6E-06		
1,1-DCA	16/28	627	123	70	--	810 N		0.8		0.2	Kidney Carcinogen
1,2-DCA	6/28	9.4	1.93	3	5	0.12 C	7.8E-05		1.6E-05		
1,1-DCE	17/28	1500	264	7	7	0.046 C	3.3E-02		5.7E-03		Carcinogen Blood
1,2-DCE (Total)	15/28	2780	291	63	--	61 (8) N		46		4.8	
Ethylbenzene	3/28	1.5	1.04	30	700	1300 N		0.001		0.0008	Developmental, Kidney, Liver
Freon 113	14/28	1240	175	500000	--	59000 N		0.02		0.003	
TCE	19/28	8710	967	3	5	1.6 C	5.4E-03		6.0E-04		Carcinogen None Specified
1,1,1-TCA	12/28	7330	718	200	200	540 N		14		1.3	
1,1,2-TCA	5/28	3.2	1.31	5	5	0.2 C	1.6E-05		6.6E-06		Carcinogen
PCE	8/28	33.7	5.14	3	5	1.1 C	3.1E-05		4.7E-06		
Toluene	8/28	9.8	2.53	40	1000	720 N		0.01		0.004	Kidney, Liver, Neurological Carcinogen
Vinyl Chloride	6/28	15.9	2.31	1	2	0.041 C	3.9E-04		5.6E-05		
Xylenes, Total	2/28	8	2.12	20	10000	1400 N		0.006		0.002	Body Weight, Neurological
SVOCs (µg/L)											
3&4-Methylphenol	1/28	5.2	2.31	4 (9)	--	180 (9) N		0.03		0.01	Body Weight, Neurological
PAHs (µg/L)											
Naphthalene	6/28	11.8	4.75	20	--	6.2 N		1.9		0.8	Body Weight, Nasal
Notes:							Total Cancer Risk		3.9E-02	6.4E-03	
(1) - Duplicates were counted as one sample in determining frequency of detection.							Total HI		62	7.1	
(2) - If UCL exceeds the maximum detected concentration then the maximum detected concentration is presented.							Total Body Weight HI		1.9	0.8	
(3) - FDEP GCTLs, Chapter 62-777, FAC (December 2004)							Total Blood HI		46	4.8	
(4) - USEPA Maximum Contaminant Level (MCL)							Total Nasal HI		1.9	0.8	
(5) - USEPA Region 9 PRGs, November 1, 2000 (Cancer Risk = 1E-6, HI = 1).							Total Kidney HI		0.8	0.2	
(6) - Cancer Risk = Screening concentration x 1E-6 / USEPA 9 PRG							Total Developmental HI		0.001	0.0008	
(7) - HI = Screening concentration x 1 / USEPA 9 PRG							Total Neurological HI		0.09	0.06	
(8) - Value is for cis-1,2-DCE.							Total None Specified		14	1.3	
(9) - Value is for 4-methylphenol.							Total Liver HI		0.06	0.05	

some metals and polynuclear aromatic hydrocarbon (PAH) compounds were identified at concentrations exceeding acceptable levels, it was determined that the source was stormwater runoff from adjacent roads and parking lots and not groundwater originating from the **Hangar 1000** source area. In addition, surface water samples from the ditch were analyzed in June 2001, and no site-related constituents (**VOCs**) were detected at concentrations above laboratory reporting limits, indicating there is an incomplete pathway to ecological receptors.

It is the Navy's position that the preferred cleanup alternative identified in this plan is necessary to protect human health and the environment.

## Why is Cleanup Needed?

The Navy's studies of **Hangar 1000** have resulted in the following conclusions:

- As a result of past waste disposal practices, multiple chemicals that could be harmful to human health and the environment are present at the site.
- Several contaminants are present in groundwater of the **surficial aquifer** at concentrations exceeding thresholds established by the regulations.
- It is the Navy's position that the preferred cleanup alternative presented in this Proposed Plan will protect public health and the environment.

## What are the Cleanup Objectives and Levels?

Using the site investigation information and the results of the **HHPRE** and **SLERA** based on industrial land use scenarios (assumes **institutional controls** are used to prevent future

residential land use), the Navy identified the following **Remedial Action Objectives (RAOs)** at Hangar 1000:

- Prevent unacceptable risks from human exposure to constituents of concern (**COCs**) or constituents of potential concern (**COPCs**) in groundwater at Hangar 1000.
- Prevent contaminant migration from groundwater to surface water at **Hangar 1000**.

Table 2 shows the **COCs/COPCs** and **preliminary remedial goals (PRGs)**.

<b>Table 2</b> <b>Preliminary Remediation Goals for COCs</b> Proposed Plan for Hangar 1000 Naval Air Station Jacksonville Jacksonville, FL	
COC	PRG <sup>(1)</sup> (µg/L)
<b>Chlorinated VOCs</b>	
1,2-DCA	3
1,1-DCE	7
1,2-DCE (total)	63
1,1,1-TCA	200
1,1,2-TCA	5
TCE	3
PCE	3
Vinyl Chloride	1
<b>Petroleum Compounds</b>	
Benzene	1
<b>SVOCs</b>	
3-Methylphenol	35
4-Methylphenol	3.5
Naphthalene	20

<sup>(1)</sup> FDEP GCTLs (FDEP, 1999).

## Cleanup Alternatives for Hangar 1000

The Hangar 1000 RI/FFS reviews options that the Navy considered for cleanup of Hangar 1000. These options, referred to as “Cleanup Alternatives,” are different combinations of plans to restrict access and to contain, remove, or treat contamination in order to protect human health and the environment. The three “Cleanup Alternatives” considered by the Navy for Hangar 1000 were:

- G1) No Action.
- G2) **Natural Attenuation, Institutional Controls, and Monitoring.**
- G3) Source Removal with **NP, Natural Attenuation, Institutional Controls, and Monitoring.**

## Groundwater Cleanup Alternatives

The preferred cleanup alternative for groundwater at **Hangar 1000** is Alternative G3, Source Removal with **NP, Natural Attenuation, Institutional Controls, and Monitoring** with estimated capital cost of \$418,000; a 20-year net present worth of Operation and Maintenance cost of \$188,000; and a 20-year Net Present Worth Cost of \$606,000.

### Source Removal

#### **Groundwater Cleanup Alternative G3: Source Removal with NP, Natural Attenuation, Institutional Controls, and Monitoring of Groundwater and Surface Water**

Source removal with **NP** technology consists of injecting controlled amounts of an emulsion of catalyst-coated ultra fine-grained iron particles in the source area to promote reductive dechlorination of the chlorinated **VOCs** that are the main groundwater contaminants. To ensure good contact between the emulsion and the contaminated matrix, the **NP** emulsion is applied both by direct injection and a recirculation pumping system. An **NP** treatability study has been conducted at Hangar 1000. The NAS Jacksonville Partnering Team has determined that further **NP** injections are not necessary at this time and that monitoring should be implemented as the final remedy. **Natural attenuation** relies on naturally occurring processes within the aquifer to reduce contaminant concentrations over time. Microorganisms within the aquifer will metabolize the **VOC** constituents into other products. **Institutional controls** will include restriction of land use to prevent residential development and prohibition of **surficial aquifer** use for drinking purposes. Monitoring will consist of regularly collecting and analyzing groundwater samples from within the **contaminant plume** to assess the effectiveness of **natural attenuation** and the **NP** treatment and to verify that contaminants are not moving away from the site. Surface water will be monitored to check that it is not being contaminated by the groundwater. The proposed sampling schedule in the **RI/FFS** for costing purposes was semi-annually for the first five years and annually after that. Groundwater milestone dates will be used to check the progress of **natural attenuation**. Based on groundwater modeling data, it is anticipated that **COCs** will be reduced to below **GCTLs** within 17 years. Every five years, a site review (Five-year Review) will evaluate the effectiveness of this cleanup alternative. If **NP treatment, natural attenuation** and **institutional controls** fail to adequately protect human health and the environment, additional cleanup measures will be evaluated.

### No Action

#### **Groundwater Cleanup Alternative G1: No Action**

Evaluation of the No Action alternative is required by law as a basis for comparison with other alternatives. There are no costs associated with this alternative. This alternative was rejected because it would not provide protection of human health and the environment based on current contaminant levels in groundwater.

### Natural Attenuation

#### **Groundwater Cleanup Alternative G2: Natural Attenuation, Institutional Controls, and Monitoring**

The NAS Jacksonville Partnering Team considered this alternative prior to treatment with **NP**. The Net Present Worth for implementation of Alternative G2 was estimated to be \$220,000, based on a 30-year timeframe. This alternative met most criteria required for eligibility, except that conceptual modeling by the USGS indicates that several thousand years would be required for current contaminant levels to decrease to **Preliminary Remediation Goal (PRG)** levels by **natural attenuation** alone without an attempt at active source removal such as **NP** treatment.

## Use of Applicable or Relevant and Appropriate Requirements (ARARs) in Evaluation Process

**ARARs** are Federal and State environmental requirements used to evaluate the level of site cleanup, to formulate cleanup alternatives, and to control the cleanup action process. Potential chemical-specific, location specific, and action-specific **ARARs** that apply to **Hangar 1000** are discussed in the **FFS**, which can be found in the **Information Repository**. Each alternative has been evaluated to determine its compliance with **ARARs**. The preferred cleanup alternative complies with all **ARARs**.

## Detailed Analysis of Cleanup Alternatives

Per **CERCLA**, a detailed review of each cleanup alternative must be performed by using nine evaluation criteria. The first eight criteria were reviewed during the **FFS**, and a summary is presented on Table 3 for the groundwater cleanup alternatives. Consult the **Hangar 1000 RI/FFS** report for more detailed information.

As indicated on Table 3, Alternative G1, No Action does not meet seven of the eight criteria. Alternative G2, **Natural Attenuation, Institutional Controls, and Monitoring** meets all criteria except one (Short-term effectiveness). Alternative G2 is identical to the Selected Alternative (Alternative G3) minus the **NP** treatment at the source area. Since contaminant concentrations at the source are several magnitudes higher than **GCTLs**, the Navy selected an active source removal alternative (i.e., **NP** injections) in addition to **natural attenuation** to reduce the time projected for contaminant concentrations to decrease to acceptable levels. Without active source removal, conceptual models indicate that contaminants may not reach targeted **PRG** levels for several thousand years.

The FDEP and USEPA were involved in the selection of the preferred cleanup alternative. However, formal acceptance will be made after the public comment period with their approval of the **Record of Decision (ROD)**. As part of the community acceptance



process, the **NAS Jacksonville Partnering Team** will brief the **Restoration Advisory Board (RAB)** on May 9, 2006. During the upcoming public comment period, the Navy welcomes comments on the preferred cleanup plan and on the other alternatives that were evaluated.

## A Closer Look at the Navy's Proposed Cleanup Plan

### 1. Institutional Controls

Remedies that include land use controls (LUCs) leave hazardous substances in place that pose a potential future risk and will require land use controls for an indefinite period of time. A site-specific **Land Use Control Remedial Design (LUCRD)** will be developed and will provide specific measures required for LUCs. NAS Jacksonville is responsible for implementing, monitoring, maintaining, reporting on, and enforcing the LUC element of the cleanup action. The **LUCRD** will remain effective as needed to be protective of human health and the environment.

For groundwater contamination, **Hangar 1000 (PSC 52)** will be added to the **LUCRD** program and land-use plans would show that groundwater is not safe to drink. These restrictions

would be removed only when a five-year site review indicates, based on the groundwater monitoring results, that the **PSC 52** cleanup levels have been achieved.

### 2. Natural Attenuation and Long-Term Monitoring

Groundwater will be monitored for contamination breakdown to assess the effectiveness of the completed **NP** injections and **natural attenuation** as a treatment for the **surficial aquifer** at **Hangar 1000**. Up to ten existing or replacement **monitoring wells** will be used for groundwater monitoring. Existing wells are shown on Figure 3. The proposed monitoring program will begin with semi-annual sampling for the first five years and annual sampling after that. Chemical concentrations and movement of the groundwater will be monitored. Groundwater monitoring will continue until cleanup is complete or, unless during a five-year review, site conditions suggest that a different cleanup method should be considered.

Surface water samples from the drainage ditch on the south side of Yorktown Avenue will also be collected on a quarterly basis for one year and semi-annually for five years for analysis to verify that groundwater contaminants originating from the **Hangar 1000** source area above the **RAO** are not discharging to the ditch.

Table 3  
Summary of Comparative Analysis of Groundwater Remedial Alternatives

Proposed Plan for Hangar 1000 Naval Air Station Jacksonville Jacksonville, Florida			
Nine Criteria <sup>(1)</sup>	Groundwater Cleanup Alternative		
	G1 No Action	G2 Natural Attenuation, Institutional Controls, and Monitoring	G3 Treatment with NP, Natural Attenuation, Institutional Controls, and Monitoring*
Protects human health and the environment	X	X	✓
Meets Federal and State requirements	X	X	✓
Provides long-term protection and permanence	X	X	✓
Reduces toxicity, mobility, or volume through treatment	X	✓	✓
Provides short-term protection	X	✓	✓
Implementability	✓	✓	✓
State acceptance	X	✓	✓
Community acceptance	To be determined after the public comment period and discussed in the <b>ROD</b> .		
Estimated cost (present worth)	\$0	\$220,000	\$606,000
Time to reach cleanup goals (in years)	>30 <sup>(2)</sup>	>30 <sup>(2)</sup>	17

#### NOTES:

X : Does not meet criterion

\* Preferred cleanup alternative

✓ meets criterion

<sup>(1)</sup> Remedial alternatives are examined with respect to the nine criteria set forth by **CERCLA** and factors described in the USEPA **RI/FS** Guidance Manual.

<sup>(2)</sup> Time to achieve cleanup goals is unknown; 30 years was used as a default value for costing based on CERCLA guidance.

### 3. Groundwater and Surface Water Monitoring Reporting

Groundwater monitoring reports will be prepared to document contamination levels and **natural attenuation** conditions after each monitoring event. The concentrations of **COCs** will be compared to the **PRGs** stated in the **FFS** to evaluate if **COC** concentrations are decreasing at the projected rate.

### 4. Five-Year Reviews

The cleanup alternative selected for Hangar 1000 will be reviewed along with the other Installation Restoration sites during the five-year reviews. Statutory five year reviews are required at NAS Jacksonville due to the Superfund Amendments and Reauthorization Act (SARA) of 1986. The next scheduled five-year review for NAS Jacksonville is due in 2010.

Based on the information currently available, the Navy believes that the above proposed cleanup plan provides the best cleanup method and expects it to satisfy the following statutory requirements of **CERCLA** §121(b): (1) be protective of human health and the environment; (2) comply with **ARARs**; (3) be cost effective; (4) use permanent solutions to the maximum extent practical; and (5) satisfy the preference for active clean up.

## Agency Concurrence

The Navy selected the preferred cleanup alternative (G3) in concurrence with both the USEPA and FDEP. These agencies will consider public participation input prior to issuing formal acceptance.

## What Impacts Would the Selected Cleanup Alternative Have on the Local Community?

The local community beyond the borders of Hangar 1000 and NAS Jacksonville are not expected to be affected by the cleanup. However, with any contaminated site there are a few potential situations that may affect the local community. The following are impacts of the preferred cleanup alternative:

- Groundwater Cleanup Alternative G3 actions do not immediately achieve safe levels as determined by the FDEP and USEPA and will require administrative action to restrict land (prevent residential use) and groundwater use (prohibit use of **surficial aquifer** for drinking water purposes).
- Groundwater Cleanup Alternative G3 will involve the generation of a limited amount of contaminated groundwater. This limited amount of groundwater will be taken off-site for disposal and may pose a risk to nearby communities during transport. However, measures (e.g., use of experienced transporters, use of containers to prevent releases) will be taken to reduce and control these risks.

## Why Does the Navy Recommend this Proposed Plan?

The preferred cleanup alternative is recommended for the following reasons:

- With the controlled access at Hangar 1000 and the **LUC** program currently in place at NAS Jacksonville, it is expected that the proposed cleanup actions provided by Groundwater Cleanup Alternative G3 are satisfactory for the protection of human health. If the land use changes from non-residential, other cleanup strategies may be considered.

- Hangar 1000 does not currently provide a significant ecological habitat and future land use is expected to remain this way in the future.
- Groundwater at Hangar 1000 is contaminated above regulatory criteria and presents a potential human health hazard. Concentration of **COCs** are several magnitudes higher than acceptable levels at the source area inside the keyway of Hangar 1000. Prior application of **NP** in source areas of high contaminant concentrations has been evaluated and appears to be an effective cleanup method. The Navy believes that this approach combined with **institutional controls** at Hangar 1000 will be protective of human health and the environment. Therefore, Groundwater Cleanup Alternative G3 is recommended as a feasible and cost effective alternative at Hangar 1000.

## Next Steps:

The Navy will consider and address all significant public comments received during the comment period. The responses to written comments will be included in the Responsiveness Summary, included in the Record of Decision (**ROD**). After the **ROD** is signed, it will be made available to the public at the **information repository** at the Jacksonville Public Library, Jacksonville, Florida.

## Glossary of Terms

This glossary defines the terms used in this Proposed Plan. The definitions in this glossary apply specifically to this Proposed Plan and may have other meanings when used in different circumstances.

### Applicable or Relevant and Appropriate Requirements

(**ARARs**): The Federal, State, and local environmental rules, regulations, and criteria that must be met by the selected cleanup action under **CERCLA**.

**Constituents of Concern (COCs)**: A substance detected at a level and/or in a location where it could have an adverse effect on human health and the environment.

**Constituents of Potential Concern (COPCs)**: A substance detected at a level and/or location that was determined during the **RI** to possibly have the potential for adverse effects on human health and the environment.

### Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

A Federal law also known as "Superfund." This law was passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA). This law created a special tax that goes into a trust fund to investigate and cleanup abandoned or uncontrolled hazardous waste sites. However, Federal facilities are funded separately.

**Contaminant Plume**: An area of groundwater with concentrations of one or more **COCs** exceeding those authorized by federal, state, and local environmental regulations.

**Focused Feasibility Study (FFS)**: A report that presents the development, analysis, and comparison of cleanup alternatives.

**Groundwater Cleanup Target Levels (GCTLs)**: Groundwater quality levels established by the Florida Administrative Code. Contaminant levels exceeding these values must be reduced to below these values.

**Hangar 1000:** Large structure on south side of flightline at NAS Jacksonville where large aircraft are serviced, access to which is off of Yorktown Avenue.

**Human Health Preliminary Risk Evaluation (HHPRE):** An evaluation of current and future potential for adverse human health effects from exposure to site contaminants.

**Information Repository:** The public location for community access of documents regarding the installation cleanup activities. The NAS Jacksonville **information repository** is located at the Webb Wesconnet Branch of the Jacksonville Public Library, 6887 103<sup>rd</sup> Street, Jacksonville, Florida.

**Institutional Controls:** Administrative measures taken to restrict site access, current land use or future development, or groundwater use. Typical **institutional controls** consist of deed restrictions. **Institutional controls** concerning land development are also referred to as land use controls.

**Land Use Control Remedial Design (LUCRD):** The CERCLA document that specifies the detail LUC portion of the selected remedy.

**Monitoring Well:** A pipe inserted vertically into the ground, usually two inches in diameter or less, with a slotted (i.e., screened) section at the bottom, allowing for influx of groundwater for the purpose of groundwater quality testing.

**Nanoscale Particle:** Iron particles that are within 1 to 300 nanometers ( $10^{-8}$  to  $10^{-9}$ ) in diameter.

**NAS Jacksonville Partnering Team:** A team of representatives from several governmental agencies and contractors working together to coordinate and cleanup contaminated sites at NAS Jacksonville. The team includes representatives of the USEPA, FDEP, and Navy.

**National Priorities List:** The list of select national CERCLA sites.

**Natural Attenuation:** A passive cleanup technique which relies on the natural breakdown (dispersion, dilution) of chemical constituents over time to significantly reduce levels of contaminants in soil or groundwater.

**Operable Unit:** CERCLA designation used for remedial actions which apply to the entire site. Used for site/project planning and tracking.

**Potential Source of Contamination (PSC):** An area where environmental contamination was identified.

**Preliminary Remedial Goal (PRG):** Reduced contaminant concentrations which cleanup actions at a site are seeking to achieve in order to comply with environmental regulatory guidelines.

**Record of Decision (ROD):** An official document that describes the selected cleanup action for a specific site. The **ROD** documents the cleanup selection process and is issued by the Navy following the public comment period.

**Remedial Action Objective (RAO):** A cleanup objective agreed upon by the **NAS Jacksonville Partnering Team**. One or more **RAOs** are typically formulated for each environmental site.

**Remedial Investigation (RI):** A report that describes the site, documents the type and location of environmental contaminants, and presents the results of the risk assessment.

**Restoration Advisory Board (RAB):** A community action group that meets regularly to be briefed by the Navy and their contractors on the progress of environmental investigations and cleanup activities for a given facility. The **RAB** provides the opportunity for the community to give input into the cleanup program before final decisions are made.

**Screening Level Ecological Risk Assessment (SLERA):** An evaluation of current and future potential for adverse environmental effects from exposure to site contaminants.

**Soil Cleanup Target Levels (SCTLs):** These are regulatory levels established to guide cleanups for sites in Florida where soil contamination has been identified.

**Surficial Aquifer:** An aquifer nearest the earth's surface. Also referred to as the groundwater table aquifer. At **Hangar 1000**, the **surficial aquifer** typically extends from approximately 5 feet below ground surface to approximately 50 feet below ground surface.

**Volatile Organic Compounds (VOCs):** Organic compounds that evaporate readily at normal air temperatures. Typical **VOCs** include the light fraction of gasoline (benzene, toluene, xylenes) and low molecular weight solvents, such as trichloroethene.

## Submitting Formal Comments

During the 30-day comment period, the Navy will accept written comments and hold a public meeting where community members can ask questions or voice concerns.

Written comments should be sent to:

Bill Raspet  
Environmental Department  
Box 2, Naval Air Station Jacksonville  
Jacksonville, Florida 32212-5000  
Phone: (904) 542-4229, Fax: (904) 542-4368

The Navy will review comments received at the meeting and written comments received during the comment period before making a final clean-up decision. Written comments will be included in the Responsiveness Summary contained in the **ROD**.

## For More Detailed Information

To help the public understand and comment on the preferred cleanup alternative for the site, this document summarizes a number of reports and studies. The technical and public information documents prepared to date for the site are available at the following **information repository**:

Webb Wesconnet Branch  
Jacksonville Public Library  
6887 103<sup>rd</sup> Street  
Jacksonville, Florida  
(904) 778-7305





**Use This Space to Write Your Comments  
or to Be Added to the Mailing List**

Please use this form for your written comments and mail to the address below. Your comments must be postmarked no later than June 2, 2006.

Bill Raspet  
Environmental Department  
Box 2, Naval Air Station Jacksonville  
Jacksonville, Florida 32212-5000

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

(Attach additional sheets as needed.)

Comment submitted by: \_\_\_\_\_

### Mailing List Additions, Deletions, or Changes

I would like to:

- ☐ be added to the site mailing list.
- ☐ note a change of address.
- ☐ be deleted from the mailing list.
- ☐ obtain additional information concerning the RAB.

Name: \_\_\_\_\_

Address:

\_\_\_\_\_

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Please check the appropriate box and fill in the correct address information above.



**Naval Air Station Jacksonville  
Hangar 1000, Operable Unit 6, PSC 52  
Public Comment Sheet (Continued)**

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Fold, staple, stamp, and mail \_\_\_\_\_

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Place  
Stamp  
Here

BILL RASPET  
ENVIRONMENTAL DEPARTMENT  
BOX 2, NAVAL AIR STATION JACKSONVILLE  
JACKSONVILLE, FL 32212-5000